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The present invention provides several methods and apparatuses for varying the size of a radiolink protocol (RLP) packet based on channel condition estimation. According to one aspect, a channel condition metric is generated to indicate a channel condition. The channel condition metric is processed to determine the optimal packet-size for the channel condition. An optimal RLP packet-size that corresponds to the processed channel condition metric is chosen. All the optimal RLP packets that are control type are equipped with CRC bits and sent to the requestor. Sending an optimal RLP packet helps maximize system throughput and adding CRC bits to the control type RLP packets prevents the RLP packet from getting rejected due to bit errors.